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PRESS RELEASE

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Sci-Fi becomes reality

Navy Lakehurst developing robotics capability for use on Aircraft Carriers

March 3, 2005: LAKEHURST, NJ – Think back to any sci-fi adventure flick you've ever seen—from *Star Wars* to *I, Robot*—to easily envision an environment populated by people working seamlessly with an assortment of drones and droids that willingly aid, assist and even protect their human counterparts. Would you believe this seemingly futuristic vision is on the verge of being realized onboard the flight decks of aircraft carriers and other air-capable ships currently serving in the U.S. Navy's fleet?

Within the Artificial Intelligence and Robotics area of the NAVAIR Aircraft Platform Interface Laboratory, scientists and engineers are using what we think of as industrial light and magic—namely, artificial neural networks, intelligent data agents, and expert systems—to create machinery that will reduce human workload in labor intensive areas and replace human beings in situations that are considered physically difficult and dangerous.

One of the lab's ongoing projects (Foster-Miller Inc., is a prime contractor) is the development of a shipboard weapon loader, which is a manipulator mounted on omni-directional platform. It is being developed to load weapons on aircraft using human-in-the-loop with force amplification concept   Building of such a mechanism is complicated by the dynamics of the shipboard environment. It is like trying to lift an automobile to a certain point in space with a precision of Swiss watch while standing on moving floor by only one person. This has never been done before.

The laboratory is also exploring the uses of the dynamic gesture (as apposed to static pose) recognition. For instance, if computer can automatically recognize gesture signals provided by a camera then such a system could be used for control of unmanned aircraft during flight deck operations. One of the current in-house projects is development of such a gesture control system. Using this system an unmanned aircraft would respond to its human handler, thereby mirroring the way in which a pilot is customarily directed on the flight deck. If such gesture control system is developed then unmanned aircraft could be seamlessly integrated on carrier decks along side with the manned aircraft with minimum investment.

By drawing on its expertise and assets, the lab validates concepts that eliminate labor intensive or dangerous tasks, even in areas where the tasks to be performed are mission sensitive. The goal is to reduce workload while recognizing the need for human in the loop interaction with the intended innovations and inventions.

These exploratory technologies, at present being developed for use in military applications, have the potential to be applied in other areas with high accountability such as the construction industry and disaster preparedness agencies as well as in the development of assistive technologies, such as better wheelchairs and other devices for the physically disabled.

Photo caption: Jeffrey Tieman of the Artificial Intelligence and Robotics lab controls the omni-directional laboratory development robot, affectionately known as the "Lab Rat," using standard NATOPS signals for taxiing operations on the flight deck of an aircraft carrier.

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